WHAT IS CLAIMED IS:

1   1.   A method of consistently selecting a particular Packet Data

2   Service Node (PDSN) from a plurality of PDSNs in a packet data network

3   to host a data session for a Mobile Node (MN), said method comprising

4   the steps of:

5   storing a static lookup table in a Packet Core Function (PCF), said

6   table including a list of identifiers for MNs and an associated list of the

7   plurality of PDSNs in the network;

8   utilizing the lookup table by the PCF to associate the identifier for

9   the MN with a PDSN; and

10   selecting the associated PDSN by the PCF to host the data session

11   for the MN.

1   2.   The method of consistently selecting a particular PDSN of

2   claim 1 wherein the network includes a plurality of PCFs, and the step of

3   storing a static lookup table in a PCF includes storing the lookup table in

4   every PCF in the network.

1   3.   The method of consistently selecting a particular PDSN of

2   claim 2 further comprising the steps of:

3   performing a dormant handoff procedure to hand off the MN from

4   a source PCF to a target PCF in the network, said dormant handoff

5   procedure including the step of passing the identifier for the MN to the

6   target PCF;

7   utilizing the lookup table in the target PCF to associate the identifier

8   for the MN with the selected PDSN; and

9   connecting the MN to the selected PDSN by the target PCF.

1   4.   A method of reselecting a particular Packet Data Service

2   Node (PDSN) from a plurality of PDSNs in a packet data network to host

3   a data session for a Mobile Node (MN) following a handoff of the MN

4   from a source Packet Core Function (PCF) to a target PCF when the MN

5   returns to the source PCF, said source PCF having initially assigned the

6   PDSN to host the data session before handing off the MN, said method

7   comprising the steps of:

8   storing in a cache memory in the source PCF, an identifier for the

9   MN and an Internet Protocol (IP) address for the particular PDSN for a

10   predetermined period of time after handing off the MN;

11   determining whether the MN returned to the source PCF within the

12   predetermined period of time; and

13   reselecting the particular PDSN to host the data session if the MN

14   returned to the source PCF within the predetermined period of time.

1   5.   The method of reselecting a particular PDSN of claim 4

2   further comprising, before the step of storing in the cache memory the

3   identifier for the MN and the IP address of the particular PDSN, the steps

4   of:

5   storing a static lookup table in all of the PCFs in the network, said

6   table including a list of identifiers for MNs and an associated list of the

7   plurality of PDSNs in the network;

8   obtaining by the source PCF, the identifier for the MN;

9   utilizing the lookup table in the source PCF to associate the

10   identifier for the MN with the particular PDSN; and

11   selecting the particular PDSN by the PCF to host the data session

12   for the MN.

1   6.   A method of consistently selecting a particular Packet Data

2 Service Node (PDSN) from a plurality of PDSNs in a packet data network

3 to host a data session for a Mobile Node (MN), said particular PDSN

4 being selected by a plurality of Packet Core Functions (PCFs) in the

5 network, said method comprising the steps of:

6   initially selecting, by a first PCF, the particular PDSN to host the

7 data session;

8   sending an information message from the first PCF to the MN via

9 a Base Station Controller (BSC) with an indication of the Internet Protocol

10 (IP) address of the particular PDSN; and

11   passing the IP address of the particular PDSN from the MN to any

12 other PCF where the MN roams in the network.

1   7.   The method of consistently selecting a particular PDSN of

2 claim 6 wherein the step of initially selecting the particular PDSN to host

3 the data session includes the steps of:

4   storing a static lookup table in the first PCF, said table including a

5 list of identifiers for MNs and an associated list of the plurality of PDSNs

6 in the network;

7   obtaining by the first PCF, an identifier for the MN;

8   utilizing the lookup table by the first PCF to associate the identifier

9 for the MN with a PDSN; and

10   selecting the associated PDSN by the first PCF to host the data

11   session for the MN.

1   8.   The method of consistently selecting a particular PDSN of

2   claim 6 wherein the indication of the IP address of the selected PDSN is

3   a PDSN zone ID.

1   9.   A Packet Core Function (PCF) that consistently selects a

2   particular Packet Data Service Node (PDSN) from a plurality of PDSNs

3   in a packet data network to host a data session for a Mobile Node (MN),

4   said PCF comprising:

5   a static lookup table that includes a list of identifiers for MNs and

6   an associated list of the plurality of PDSNs in the network;

7   means for obtaining an identifier for the MN; and

8   a hash function that associates the identifier for the MN with the

9   particular PDSN utilizing the lookup table, and selects the particular

10   PDSN to host the data session for the MN.

1   10.   The PCF of claim 9 further comprising:

2   a cache memory that stores the identifier for the MN and an Internet

3   Protocol (IP) address for the particular PDSN for a predetermined period

4   of time after handing off the MN to another PCF;

5   a cache timer for determining when the predetermined time period

6 has expired; and

7   means for reselecting the particular PDSN to host the data session

8 if the MN returns to the PCF within the predetermined period of time.

1   𝑀.   A system for consistently selecting a particular Packet Data

2 Service Node (PDSN) from a plurality of PDSNs in a packet data network

3 to host a data session for a Mobile Node (MN), said system comprising:

4   a Radio-Packet (R-P) network that connects each of a plurality of

5 Packet Core Functions (PCFs) to the plurality of PDSNs; and

6   a plurality of PCFs, each PCF selecting a PDSN to host the data

7 session when the MN roams into an area controlled by the PCF, each of

8 said PCFs comprising:

9   a static lookup table that includes a list of identifiers for MNs

10 and an associated list of the plurality of PDSNs in the network;

11   means for obtaining an identifier for the MN; and

12   a hash function that associates the identifier for the MN with

13 the particular PDSN utilizing the lookup table, and selects the particular

14 PDSN to host the data session for the MN.